REMARKS

Concerning the objections to the drawings, the description has been amended (last paragraph) to include the reference numeral 15'.

Nevertheless, Fig. 1 should be amended as indicated in red on the accompanying print thereof. A replacement figure is enclosed herewith in which the leadline of the number 72 has been extended to the lens which is indicated by the numeral 72.

The Examiner has rejected claims 1 – 3, 10 and 12 -14 under 35 USC 102(b) as being anticipated by Sacher (US 5 867 512), (probably not 5 867 215 as given by the Examiner).

This patent describes generally an external cavity diode laser with a Litman/Metcalf configuration the main purpose of which is to provide a special arrangement compensating for the chromatic dispersion of the laser diode.

Concerning the Examiner's rejection of claim 1 on the basis of US 5 867 512, it is noted that the principle feature of the present invention as defined in claim 1 relates to a special beam path for a broad area (1µm x 5 µm to 600 µm or greater) diode laser within the external cavity which allows the use of just one spherical or just one aspherical lens (30) within the external cavity. The prior art requires either two-stage collimation optics or dealing with the astigmatism of broad area laser diodes.

Claim 4 has been rejected by the Examiner as being anticipated by Mehuys et al. (US 5 537 432).

Mehuys et al. (US 5 537 432) relates to flared gain section diode lasers for high-power external cavity diode lasers which are very expensive and are problematic in certain respects which is exactly what the present invention is intended to overcome.

Such flared gain section diode lasers are not only expensive they also have significant problems due to high lateral modes within the laser chip. Therefore a partial antireflection coating is provided to the flared facet of the laser diode for avoiding the higher lateral modes (column 5, lines 13 – 25). Reference is made in this patent to a rear facet reflectivity between 0.5% and 5%. This reflectivity is required for avoiding multiple lateral modes of the flared laser chip. This is essential for spatially single mode emission. US 5 537 432 fails concerning the setting of the reflectivity of the out-coupling facet to the effective reflectivity of the external cavity (40) – which is absolutely essential for the present application. A violation of the given condition ratio of out-coupling reflectivity/cavity reflectivity <1 will result in poor laser

power emission. US 5 537 432 is concerned with flared gain section diode lasers including a spatial filter. Without a spatial filter, these features are not transferable to broad area lasers which do not include spatial filters.

The ratio of less than 1:1 refers to Fig. 13 of US 5 537 437. In Fig. 13 of 5 537 432, one facet is indicated by AR to which the Examiner seems to refer by the reference numeral 21. In Fig. 13, however the facet indicated by AR is equivalent to the facet 23. The amplifier chip 136 is positioned relative to a frequency selective external cavity having a lens 138 and an external rear grating reflector 140. The ratio between the external rear grating reflector 40 and the facet AR is of course less than 1:1. However, concerning the Examiner's referral to the grating 132, it is pointed out that the grating 132 is not part of the cavity. The purpose of the grating 132 is the redirection of the laser beam into the vertical or transverse direction.

The Litman/Metcalf configuration is well-known in the art, unknown however is an arrangement with the AR coating condition for the out-coupling facet. Furthermore, the special cavity design which overcomes the need for a spatial filter within the diode laser chip is also not disclosed by the prior art.

Concerning the Examiner's rejection of claims 10 – 11, it is noted that US 5 537 432 provides no value for the reflectivity of the antireflection coating. For a broad area diode however, a very low reflectivity is essential. Claims 10 and 11 have been combined as it is essential that the reflectivity is less than 0.1% - which is not disclosed in the cited reference.

With regard to the claims 15 – 18, it is noted that US 5 537 432 relates to flared types of gain section diode lasers. Claim 17 has been canceled as the arrangement claimed therein also could be a flared type diode laser. However, claims 15, 16 and 18 relates to arrangements specific to broad area diode lasers. The external cavity design defined therein does not involve expensive flared diode lasers with internal spatial filters. Rather, the claimed arrangements cover broad area diode lasers with a rectangularly-shaped gain area within an external cavity of a special design which avoids the use of expensive flared gain section diode lasers. None of the figures or claims of 5 537 432 relates to broad area diode lasers with rectangular-shaped gain areas, so that claim 15, 16, and 18 are certainly not anticipated by US 5 537 432.

US 4 891 817 (Duarte) relates to an embodiment of dye lasers. The described cell is designed for the dye jet flow. There is no analogy to the concept according to the present in-

vention so that this reference does not lend itself to a combination with US 5 537 432 and claims 15, 16, and 18 cannot be considering obvious alleged by the Examiner.

Concerning claims 16, 18, it is further noted that the given size of 5 μm to 600 μm and 5 μm to 300 μm refers to the polygonal width of the gain region within the broad area diode laser whereas US 4 891 817 refers to the length of the resonator to be 0.5 mm to 1.00 mm. Furthermore, this size is not realized by either the rise of the metallization of the broad area laser or by the size of a doped area within the laser chip or by the size of a non-etched area of the laser chip. No reflective coating is applied for defining the width of the resonator.

The dependent claims, all depend directly or indirectly on claim 1 and therefore should be considered to be patentable already for that reason.

Furthermore, it has been pointed out above that even some of the dependent claims include features, which are not disclosed in, nor obvious from, the prior art cited by the Examiner.

The Examiner is respectfully requested to reconsider his rejection of the claim of the present application

Concerning the double patenting rejection, it is noted that all three application relate to different laser configurations.

SN 10/784,029 relates to a two-segment design of the laser diode which is to be coupled to an internal resonator.

SN 10/784,030 relates to a special coating design of the rear facet of the laser diode, and

SN 10/783,879 relates to a special beam propagation scheme within the external resonator.

Although the laser structures are similar the claimed concepts are quite different that is they are actually different in principle so that the double patenting objection should not apply.

Reconsideration of the double patenting rejection is therefore respectfully requested.

Allowance of claims 1 – 10, and 12 – 16, 18 and 19 is solicited.

Respectfully submitted,

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